Sir Edward Victor Appleton,
G.B.E., K.C.B., F.R.S.
B.A. 1914. Fellow 1919-1925 and 1936-1939

SIR EDWARD APPLETON, Honorary Fellow, died very suddenly at his home in Edinburgh on Wednesday, April 21st 1965, aged 72. He was one of the world's leading physicists and, more than any other, the founder of the science which we now call Ionospheric Physics.

He first came to the College in 1911 and was elected to a Scholarship in 1913. He took the Natural Sciences Tripos, Part I in 1913 and Part II (Physics) in 1914 and obtained a first class in both parts. When war came he enlisted as a private in the West Riding Regiment, but was later transferred to the Signals branch of the Royal Engineers and became a Wireless Officer with the rank of Captain. At this time the earliest wireless valves were coming into use and some of us can remember Appleton's stories of experiments with them in the trenches. This interest continued and led later to his only text-book, a small monograph on the Thermionic Vacuum Tube which has since run through numerous editions and is still widely used by students.

After the war he returned to Cambridge to work in the Cavendish Laboratory and was elected to a Fellowship of the College in 1919. He now began research and by 1923 had published seven or eight scientific papers mostly on wireless valves and their use in electrical circuits. From 1923 onwards some of his papers dealt with the propagation of radio waves and the possible effects of electrically conducting regions in the earth's atmosphere. The work culminated in December 1924 in the direct experimental proof of the existence of a region about 100 km. high which can reflect radio waves. This Kennelly-Heaviside layer had been postulated as early as 1902 but Appleton and M. A. F. Barnett gave the first unambiguous demonstration of its presence. Shortly afterwards Appleton left Cambridge to become Wheatstone Professor of Experimental Physics at King's College, London. But the experiments continued and led, a few years later, to the discovery of a higher reflecting layer known at first as the Appleton layer. He renamed these layers the E-layer and the F-layer, wisely leaving some alphabetical leeway; some lower layers called the D-layer and the C-layer have since been discovered. The whole group of ionised layers is now called The Ionosphere. Appleton was elected a Fellow of the Royal Society in 1927.

Before he left the College in 1925 he was Director of Studies in Physics. He was succeeded in this post by a theoretical physicist, D. R. Hartree. Both of them had worked on the theory of the effect of the earth's magnetic field on the propagation of radio waves through the ionised upper atmosphere and deduced independently a formula giving their velocity and attenuation. This is now the famous Appleton-Hartree formula, though in fact it was also published at about the same time by another Johnian.

Appleton returned to Cambridge in 1936 as Jacksonian Professor of Natural Philosophy in the Cavendish Laboratory. He was re-elected a Fellow of the College and had rooms in B New Court. Here we used to meet ionospheric physicists from all over the world. Here too we watched the Boat Race on one of the first occasions when it was televised.

In 1939, he became Secretary of the Department of Scientific and Industrial Research, a most important post involving a major share in the direction of our scientific resources for war. He was knighted in 1941 and awarded the Nobel Prize for Physics in 1947. In 1949 he became Principal and Vice-Chancellor of Edinburgh University, and held this position until his death.

In addition to the heavy responsibilities of his position at Edinburgh he was editor of the *Journal of Atmospheric and Terrestrial Physics*, affectionately known as "The Appleton Journal", and he continued to publish scientific papers, mostly on the formation and changes of the Ionosphere. In his later years he also wrote many articles of a wider scientific interest, for example the Reith Lectures, in 1956, entitled "Science and the Nation". Of particular Johnian interest is the Sir Joseph Larmor Memorial Lecture published in the *Proceedings of the Royal Irish Academy* in 1961 (Vol. 61A, p. 55) entitled "Sir Joseph Larmor and the Ionosphere".

He was elected an Honorary Fellow of the College in 1946.

September, 1965. K. G. B.